

Rufus Brown

From: Blais Becky [Becky.Blais@Maine.gov]
Sent: Thursday, September 09, 2010 2:40 PM
To: Baker, George; Richard James; Thomas Doyle; Rufus Brown; Wood, Eric W.
Cc: Cassida, James
Subject: FW: July 17-18, 2010 Complaint Review
Attachments: EnRad Estimated Sound Levels for July 17-18, 2010 at ML-A.pdf; REVIEW data submission July 17-18, 2010 for FIW.pdf

Becky Blais
Project Manager
Maine Department of Environmental Protection Division of Land Resource Regulation

-----Original Message-----

From: Warren Brown [mailto:Warren_Brown@umit.maine.edu]
Sent: Wednesday, September 08, 2010 11:04 AM
To: Blais Becky
Subject: July 17-18, 2010 Complaint Review

Becky,

I have reviewed the July 17 & 18 FIWN noise complaint measured in Arthur Farnham's dooryard as submitted by Rick James in "2010-7-17 2233 MLC-RJ". I have reviewed FIW data (meteorological, sound, wav. files and turbine output) for compliance proxy point ML-C on the Webster property and predictions for compliance point ML-A on the Farnham property.

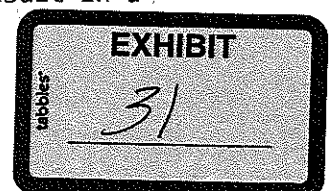
10 m average wind speeds ranged from 3.5 to 5.6 mph with maximums 5.9 to 10.2 mph, which are within the compliance measurement criteria. The Farnham property ML-A location was crosswind from the turbine array center during the entire complaint period. The Webster property ML-C location was downwind for the first 30 minutes and then crosswind for the remainder of the complaint period.

Wind turbines were operating in NRO mode which limits sound power output, as follows T1 - 102 dBA; T2 - 100 dBA; T3 - 102 dBA.

I do not find significant wind interference with sound data during the complaint period based on the L10 - L90 values or time stamped audio files. L10 - L90 values were predominantly 3 dBA (5-10 minute intervals) and 4 dBA (3-10 minute intervals). The wind sound correlation employed by Accentech to estimate wind sound was based on measurements recorded at the Farnham property during ambient measurements (fall 2008) where the anemometer was at 14ft 2in elevation above the ground and partially obstructed by the residence and a nearby tree. The ML-C anemometer is 10 m above grade in an unobstructed location (Webster property). There is insufficient information to calculate a useful wind speed/noise level correlation at ML-C based on results derived in the fall of 2008.

SDRS and tonal penalty calculations were not included in the FIW data analysis. SDRS during the complaint period occurred infrequently and applied penalties did not result in a significant change in findings.

WTG 6.3kHz tonal sounds occurred



during 2300-2350hrs. (5-10 minute intervals), but applied penalties did not result in a significant change in findings.

Conclusions/Recommendations.

I find no 10 m meteorological, audible or L10-L90 basis for applying a wind speed/noise level adjustment to ML-C measurements or ML-A calculated sound levels.

I have attached measured sound levels at the Webster property (ML-C) and EnRad estimated sound levels at the property line of the Farnham property ML-A, which indicates that FIW exceeded the nighttime noise limit of 45 dBA for 7-10 minute intervals during the complaint period.

The July 17 & 18 complaint conditions were very similar with regards to surface wind speeds and WTG output or 80m wind speeds (May data) as FIWN complaints previously submitted for May 1, 4, 5, & 6 all of which reported sound levels between 46-48 dBA. Although these complaints were prior to the "FIW compliance protocol" in timing, nonetheless there exists a significant body of consistent meteorological and sound data indicating sound levels greater than applicable limits.

Substantial changes are recommended for FIW nighttime operations, limiting WTG sound levels at ML-A to 45 dBA.

A review of the Compliance-Complaint data submission requirements for Fox Islands Wind, LLC is attached. Consultants for FIW and FIWN please note items requiring your attention and submission.

Warren

Warren L. Brown
Radiation Safety Officer
University of Maine
5784 York Village Building 7
Orono, Maine 04469

Phone: (207) 827-6920
E-mail: warren.brown@maine.edu

EnRad Estimated FIW Sound Levels at ML-A from Proxy Compliance Location ML-C Complaint Period -- July 17-18, 2010

Webster Proxy Location ML-C	Farnham PL Location ML-A	FIW Turbine Individual & Total Power Output				
Measured	Estimated					
Time - EDT	Leq(dBA)	Leq(dBA)	T1	T2	T3	Total
7/17/10 23:00	42	45	511	534	666	1712
7/17/10 23:10	45	48	528	586	621	1734
7/17/10 23:20	44	47	675	564	806	2044
7/17/10 23:30	45	48	552	648	685	1884
7/17/10 23:40	44	47	668	564	872	2104
7/17/10 23:50	45	48	694	683	852	2230
7/17/10 0:00	44	47	755	400	895	2050
7/17/10 0:10	43	46	925	671	1066	2663

COMPLAINT – July 17-18, 2010

Compliance-Complaint data submission requirements for Fox Islands Wind, LLC

Project compliance: In order to determine project compliance **ALL** FIW noise compliance data must be collected in accordance with the Chapter 375.10 (H) standards outlined below (emphasis added) and the following requirements:

1.	All noise and associated data collected must be submitted to the department by an individual “qualified professional” whose scope of services includes environmental (community) acoustic measurements in accordance with 375 H (2.1)	Y
	The qualified professional may use on-site assistants to collect noise and associated data provided that all on-site assistants are pre-approved by the department prior to collecting any data.	Y
	Pre-approval shall include the submittal of the names of the on-site assistants, a training outline supplied by the qualified professional providing over site, and a description of the qualified professional’s oversight arrangement.	Y
2.	All compliance data submitted by the permit holder must include an analysis prepared by the qualified professional for department review in addition to the raw data and associated specifications.	Y
3.	All data submittals must be accompanied by all instrument (meteorological and acoustical) specifications, limitations and certifications;	Y
4.	All data submittals must be accompanied by all instrument calibrations as specified in H (2.3)(a & b);	N
5.	All data submittals must be accompanied by all manufacturer’s windscreen performance specifications;	Y
6.	All data submittals must be collected at a measurement location (meteorological and acoustical), configuration and environment approved by the department	Y
7.	All data submittals must be accompanied by observer field notes or in lieu of field notes, a characterization of the field conditions at the time of measurement prepared by the qualified professional based on best available data. Specifically, the department is looking for a characterization of background conditions that may otherwise affect the sound measurement such as increased biological activities, leaf rustling, traffic, high water flow or other extraneous ambient noise sources.	*
8.	All data submittals must be accompanied by concurrent time stamped audio recordings	Y
9.	All data submittals must be submitted in accordance with the reporting criteria as outlined in the document entitled “Fox Islands Wind Power Project Noise Impact Assessment-Peer Review” dated November 25, 2009.	*
10.	All data submittals must be accompanied by concurrent, time stamped turbine data (meteorological/operational) + 10m surface METS. This data must include appropriate NRO setting when applicable.	Y

COMMENTS

Item 4. Awaiting calibration clarification from Eric Wood

Item 7. This is a fully automated Type 1 system. The daily system maintenance schedule occurring at midnight, should be adjusted to daytime hours, if possible.

Item 9. SDRS and tonal penalty calculations are not included in the final sound levels.

Noise complaint protocol: All noise complaint data submitted by interested parties must to the extent practicable be collected in accordance with the Chapter 375.10 (H) standards and the following requirements. The department recognizes that the interested parties are not bound to the compliance protocol approved as part of the license for Fox Island Wind, LLC.; however, data collected in a manner contrary to the protocol outlined below will be difficult to effectively analyze and may be discounted by the department.

1.	All noise and associated data collected must be submitted to the department by an individual "qualified professional" whose scope of services includes environmental (community) acoustic measurements in accordance with 375 H (2.1)	Y
	The qualified professional may use on-site assistants to collect noise and associated data provided that all on-site assistants are pre-approved by the department prior to collecting any data.	Y
	Pre-approval shall include the submittal of the names of the on-site assistants, a training outline supplied by the qualified professional providing over site, and a description of the qualified professional's oversight arrangement.	Y
2.	All noise data collected by qualified assistants must be sent to the qualified professional for initial analysis. If the qualified professional determines that a particular data collection warrants analysis as a complaint "data of interest" the qualified professional will notify the department project manager and the permit holder to request <u>all data</u> , including noise data, time stamped turbine data, and 10m meteorological data for the specific period being considered.	Y
	Upon receipt of the permit holder data the qualified professional will analyze the data and determine if a formal complaint is warranted.	Y
3.	If a data of interest is determined to warrant a formal noise complaint, the qualified professional will file the complaint with the department along with all corroborating data and send a copy of the complaint and associated data directly to the permit holder.	Y
4.	Upon receipt of a formal complaint the department will forward the complaint data to its outside noise peer review agent for analysis. The outside noise peer review agent shall review the complaint data and report back to the department project manager within 14 days of receiving the complaint.	Y
5.	All data submittals must be accompanied by all instrument (meteorological and acoustical) specifications, limitations and certifications;	Y
6.	All data submittals must be accompanied by all instrument calibrations as specified in H (2.3)(a & b);	*
7.	All data submittals must be accompanied by all manufacturer's windscreen performance specifications	N
8.	All data submittals must be collected at a measurement location (meteorological and acoustical), configuration and environment approved by the department	Y
9.	All data submittals must be accompanied by observer field notes or in lieu of field notes, a characterization of the field conditions at the time of measurement prepared by the qualified professional based on best available data. Specifically, the department is looking for a characterization of background conditions that may otherwise affect the sound measurement such as increased biological activities, leaf rustling, traffic, high water flow or other extraneous ambient noise sources;	Y
10.	All data submittals must be accompanied by concurrent time stamped audio recordings; [The department would prefer that the time stamp correspond directly to the actual noise data collection. If it is not clear that the sound recording directly corresponds to the noise data collection interval the department will likely discount the complaint data.]	*

COMMENTS

Item 6. A single unspecified calibration point is given in the field notes. Before and after calibrations are required, as per Chapter 375.10 H (2.3)(a & b). The sound meter serial number must be provided, and agree with calibration certification.

Item 7. No final submission has been made regarding manufacturers wind screen performance specification.

Item 10. Audio files are available.

All provisions in the Department Order must be followed, with emphasis on several portions of the Small Wind Citing Certification Department Order #L-24564-ES-A-N as follows:

1. Extraneous sounds could potentially or do complicate routine operation compliance assessment. If the applicant must adjust for such sounds, background ambient monitoring may be necessary. If background ambient monitoring is proposed, locations, times and methodology should be determined with concurrence from the MDEP.
 - a. Measurements will be obtained during weather conditions when wind turbine sound is most clearly noticeable, i.e. when the measurement location is downwind of the development and maximum surface wind speeds \leq (6-12) mph with concurrent turbine hub-elevation wind speeds sufficient to generate the maximum continuous rated sound power from the wind turbines to the measurement location. Measurement intervals affected by increased biological activities, leaf rustling, traffic, high water flow or other extraneous ambient noise sources that affect the ability to demonstrate compliance will be excluded from reported data. The intent is to obtain 10-minute measurement intervals that entirely meet the specified criteria. A downwind location is defined as within 45° of the direction between a specific measurement location and the acoustic center of the wind turbines.
 - b. Sensitive receiver sound monitoring locations should be positioned to most closely reflect the representative protected locations for purposes of demonstrating compliance with applicable sound level limits, subject to permission from the respective property owner(s). Selection of monitoring locations should require concurrence from MDEP.
 - c. Meteorological measurements of wind speed and direction should be collected using anemometers at a 10-meter height above ground at the center of large unobstructed areas and generally correlated with sound level measurement locations. Results should be reported, based on 1-second integration intervals, and be reported synchronously with hub level and sound level measurements at 10 minute intervals. The wind speed average and maximum should be reported from surface stations. MDEP concurrence on meteorological site selection is required.
 - d. Compliance locations should be determined in consultation with the Department. Compliance data collected in accordance with the assessment methods outlined above for representative locations selected in accordance with this protocol should be submitted to the Department for review and approval prior to the end of the first year of facility operation. Compliance testing for each or any location indicated A-E in this assessment should be required following significant noise related complaints (locations A-E) after the commencement of operation, with consideration for the required weather, operations, and seasonal constraints.